

Serial No. 10/815,728

KY-198

Amendment filed May 29, 2007

Response to Final Office Action mailed January 29, 2007

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listing of claims in the application.

Listing of Claims

1. (Cancelled)
2. (Currently Amended) An optical system for detecting a defect in an edge portion of a disk which is translucent or transparent, comprising:
 - an illumination system for illuminating a light beam to an inspected region of said edge portion of said disk through an inside portion of said disk by directing the light beam at a predetermined incident angle with respect to a peripheral surface of said disk to be inspected; and
 - a first light receiving system provided externally of said disk in a vicinity of said inspected region, for receiving scattered light from said inspected region,
 - wherein said light beam is made a spot, said spot is incident in an outer peripheral surface of said disk and said first light receiving system receives scattered light from said inspected region of said disk, which is rotating, and has a light receiving plane of an optical fiber for receiving said scattered light.

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3. (Original) The optical system for detecting defect as claimed in claim 2, wherein said disk is a glass disk and said spot is incident in an outer peripheral side surface of said outer peripheral surface.

4. (Original) The optical system for detecting defect as claimed in claim 3, further comprising a second light receiving system provided externally of said disk, for receiving scattered light propagating within said disk from said inspected region thereof and emitted externally of said disk from a position or in the vicinity thereof, which is offset by a predetermined distance from a position of said outer peripheral side surface symmetrical to said incident position of said spot in said outer peripheral side surface about a diameter line of said disk passing through said inspected region.

5. (Currently Amended) The optical system for detecting defect as claimed in claim 4, wherein said light beam spot is a laser light, ~~each of said first and said second light receiving systems~~ system has a light receiving plane, of other optical fiber for receiving said scattered light propagating within said disk, each of said light receiving plane planes of said first and second light receiving systems is set at a certain angle within a range from 20° to 60° with respect to an upper or lower surfaces of said disk.

6. (Previously Presented) The optical system for detecting defect as claimed in claim 5, wherein said light receiving plane of said first light receiving system is opposing to a

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chamfered surface on said lower surface side of said disk, for detecting defect in said chamfered surface, and said light receiving plane of said second light receiving system is substantially vertical to said chamfered surface, for detecting defect in said inner peripheral side surface or said outer peripheral side surface.

7. (Currently Amended) The optical system for detecting defect as claimed in claim 4, wherein said light beam spot is a laser light; said second light receiving system has a light receiving plane of other optical fiber for receiving said scattered light propagating within said disk, each of said first and second light receiving systems is a light receiver including an optical fiber and a light receiving plane of said optical fiber- said light receiving planes of said first and second light receiving systems is set at a certain angle within a range from 20° to 60° with respect to an upper or lower surfaces of said disk.

8. (Original) The optical system for detecting defect as claimed in claim 7, wherein said light receiving plane of said optical fiber of said first light receiving system is opposing to a chamfered surface on said lower surface side of said disk, for detecting defect in said chamfered surface, and said light receiving plane of said optical fiber of said second light receiving system is substantially vertical to said chamfered surface, for detecting defect in said inner peripheral side surface or said outer peripheral side surface.

9. (Cancelled)

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10. (Currently Amended) A peripheral defect detector for detecting a defect in an edge portion of a disk which is translucent or transparent, comprising:

an illumination system for illuminating a light beam to an inspected region of said edge portion of said disk through an inside portion of said disk by directing the light beam at a predetermined incident angle with respect to a peripheral surface of said disk to be inspected;

a first light receiving system provided externally of said disk in a vicinity of said inspected region, for receiving scattered light from said inspected region.

a drive mechanism for rotating a spindle on which said disk is mounted;

a detection circuit for detecting defect in said inspected region of said disk by obtaining detection signal from said first light receiving system while rotating said disk, and

wherein said light beam is made a spot, ~~and~~ said spot is incident in an outer peripheral surface and said first light receiving system has a light receiving plane of an optical fiber for receiving said scattered light.

11. (Original) The peripheral defect detector as claimed in claim 10, wherein said disk is a glass disk and said spot is incident in an outer peripheral side surface of said outer peripheral surface.

12. (Original) The peripheral defect detector as claimed in claim 11, further comprising a second light receiving system provided externally of said disk, for receiving

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scattered light propagating within said disk from said inspected region thereof and emitted externally of said disk from a position or in the vicinity thereof, which is offset by a predetermined distance from a position of said outer peripheral side surface symmetrical to said incident position of said spot in said outer peripheral side surface about a diameter line of said disk passing through said inspected region.

13. (Currently Amended) The peripheral defect detector as claimed in claim 12, wherein said light beam spot is a laser light, ~~each of said first and said second light receiving systems~~ system has a light receiving plane, of other optical fiber for receiving said scattered light propagating within said disk, each of said light receiving plane planes of said first and second light receiving systems is set at a certain angle within a range from 20° to 60° with respect to an upper or lower surfaces of said disk.

14. (Original) The peripheral defect detector as claimed in claim 13, wherein said light receiving plane of said first light receiving system is opposing to a chamfered surface on said lower surface side of said disk, for detecting defect in said chamfered surface, and said light receiving plane of said second light receiving system is substantially vertical to said chamfered surface, for detecting defect in said inner peripheral side surface or said outer peripheral side surface.

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15. (Currently Amended) The peripheral defect detector as claimed in claim 12, wherein said light beam spot is a laser light; said second light receiving system has a light receiving plane of other optical fiber for receiving said scattered light propagating within said disk, each of said first and second light receiving systems is a light receiver including an optical fiber and a light receiving plane of said optical fiber- said light receiving planes of said first and second light receiving systems is set at a certain angle within a range from 20° to 60° with respect to an upper or lower surfaces of said disk.

16. (Currently Amended) A peripheral surface defect detection method for detecting a defect in an edge portion of a disk which is translucent or transparent, comprising the steps of:

illuminating a light beam to an inspected region of said edge portion of said disk through an inside portion of said disk by directing the light beam at a predetermined incident angle with respect to a peripheral surface of said disk to be inspected; and

receiving scattered light from said inspected region by a first light receiving system provided externally of said disk in the vicinity of said inspected region while rotating said disk and wherein said first light receiving system has a light receiving plane of an optical fiber for receiving said scattered light.

17. (Original) The peripheral surface defect detection method as claimed in claim 16, wherein said light beam is made a spot, said disk is a glass disk and said peripheral surface is an outer peripheral surface and said disk is mounted on a spindle and rotated.

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18. (Original) The peripheral surface defect detection method as claimed in claim 17, wherein said disk is a glass disk and said spot is incident in an outer peripheral side surface of said outer peripheral surface.

19. (Original) The peripheral surface defect detection method as claimed in claim 18, further comprising the step of receiving, by a second light receiving system provided externally of said disk, scattered light propagating within said disk from said inspected region thereof and emitted externally of said disk from a position or in the vicinity thereof, which is offset by a predetermined distance from a position of said outer peripheral side surface symmetrical to said incident position of said spot in said outer peripheral side surface about a diameter line of said disk passing through said inspected region.

20. (Currently Amended) The peripheral surface defect detection method as claimed in claim 19, wherein said light beam spot is a laser light, ~~each of said first and said second light receiving systems~~ system has a light receiving plane, ~~of other optical fiber for receiving said scattered light propagating within said disk, each of said light receiving plane~~ planes of said first and second light receiving systems is set at a certain angle within a range from 20° to 60° with respect to an upper or lower surfaces of said disk.